REMARKS

Reconsideration and allowance of the subject application in view of the foregoing amendments and the following remarks is respectfully requested.

Claims 1-23 remain pending in this application. Claims 1 and 13 have been amended and claims 2-5 and 16-17 have been cancelled.

Claims 1, 2, 6 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Trachewsky et al. (US 20010055311A1). In response, claim 1 has been amended and is believed to be patentable over Trachewsky et al. for the reasons discussed below.

The present invention is directed to a collision detection method for a multiple access communication system is disclosed. By using the error term of a time-domain equalized signal as a detection source, an operation on the error term can be performed to determine whether collision occurs. For example, the mean square error and/or maximum value of the real part and/or imaginary part of the error term can be calculated or selected to distinguish the collision and non-collision situations. A collision detection apparatus for a multiple access communication system is also disclosed. The collision detection apparatus utilizes an existent adaptive equalizer and signal processing device for obtaining received information data bits to obtain the error term. The error term is further processed by a mean-square-error or maximum-absolute-value operator to determine the collision status.

Trachewsky et al. disclose a method of determining a collision between two or more transmitting stations at one of the transmitting stations on a frame-based communications network. A transmitted frame header includes a cyclic preamble wherein identical copies of a preamble symbol sequence are transmitted sequentially. A collision is declared if an estimate of error power in second and third copies of the preamble minus an estimate of error power in third and fourth copies of the preamble exceeds a first threshold, or a maximum value of the norm of each term of a source field error vector minus a greater of the estimate of the error power in the second and third copies of the cyclic preamble and the estimate of the error power in the third and fourth copies of the preamble exceeds a second threshold.

Applicants do not agree that Trachewsky et al. show all the limitations of the present invention as required by the amended claim 1 in the manner suggested by the Examiner.

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Trachewsky et al. disclose that:

> "A header format for the transmitted frame is provided, the header format including a cyclic preamble, destination address field, source address field and fixed guard field, the destination address field and the source address field immediately following the preamble and the fixed guard field following the source address field, the cyclic preamble having a cyclic preamble format wherein a plurality of identical copies of a preamble symbol sequence are transmitted sequentially. A least-squares channel estimate of an echo channel between a station transmitter and a station receiver is computed from a received sample sequence and a transmitted preamble. An estimate of received samples of the source address field of the transmitted frame is computed by linear convolution of the least-squares channel estimate and an upsampled and zero-filled sequence of destination address, source address, and fixed guard. The estimate of received samples of the source address field of the transmitted frame is subtracted from actual received samples corresponding to the source address field to produce a source field error vectorlow-pass filtered signal. An (L_2) norm of each term of the source field error vector is computed. An estimate of received samples of second and third copies of the cyclic preamble is computed by linear convolution of the least-squares channel estimate and upsampled and zero-filled second and third copies of the cyclic preamble. An estimate of received samples of third and fourth copies of the cyclic preamble is computed by linear convolution of the least-squares channel estimate and upsampled and zero-filled known third and fourth copies of the cyclic preamble" (see page 2, paragraph 0011).

The present invention is characterized that the error term e(n) is defined as a difference between the output value of the equalizer 51 before signal slicing and the expected signal constellations after signal slicing (see page 8, paragraph 0040). Preferably, the predetermined segment is a preamble of a packet with constant sequence which is provided for collision detection according to the invention. For example, for a HomePNA 2.0 system, the constant sequence is a TRN16 sequence. The error term is obtained by comparing a section of the received packet (i.e. the received TRN16 sequence) with an expected TRN16 sequence. (Pg 3, paragraph 0008)

rachewsky et al. is different. The estimate of received samples of the source address field of the transmitted frame is subtracted from actual received samples corresponding to the source address field to produce a source field error vectorlow-pass filtered signal, but this invention's error term is obtained by comparing a section of the received packet (i.e. the received TRN16 sequence) with an expected TRN16 sequence.

In view of the above, Trachewsky et al. do not teach or disclose to obtain error term by comparing a section of the received packet (i.e. the received TRN16 sequence) with an expected

TRN16 sequence. Therefore, amended claim 1 is patentable over Trachewsky et al.

Claim 2 is cancelled and dependent claims 6 and 8 are distinguishable over Trachewsky et al. for the reasons discussed above with respect to the amended claim 1 as well as on their own merits. Accordingly, the rejection should be withdrawn.

Claims 13, 16, 17, 18 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trachewsky et al. Claim 13 has been amended and is believed to be patentable over Trachewsky et al. for the reasons discussed below.

As discussed above with respect to claim 1, Trachewsky et al. does not meet the limitations of amended claim 13 in the manner suggested by the Examiner. Trachewsky et al. do not teach or disclose to obtain error term by comparing a section of the received packet (i.e. the received TRN16 sequence) with an expected TRN16 sequence. Therefore, the amended claim 13 is patentable over Trachewsky et al. and the rejection should be withdrawn.

Claims 16-17 are cancelled and dependent claims 18 and 21-23 are distinguishable over Trachewsky et al. for the reasons discussed above with respect to the amended claim 13 as well as on it own merit.

Claims 3-5, 14, 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trachewsky et al. in view of the prior art. Applicants respectfully traverse this rejection.

Claims 3-5 are cancelled and dependent claims 14, 15 and 20 are distinguishable over Trachewsky et al. for the reasons discussed above with respect to amended claim 13 as well as on their own merits.

Claim 9 is rejected under 35 U.S.C. 103 as being unpatentable over Trachewsky et al. in view of what is considered conventional in the subject matter area of the invention. Applicants respectfully traverse this rejection.

Dependent claim 9 is distinguishable over Trachewsky et al. for the reasons discussed above with respect to the amended claim 1 as well as on their own merits.

Claims 7, 10-12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trachewsky et al. in view of Davidson et al. (U.S. Patent No. 6,246,693. Applicants respectfully traverse this rejection.

Davidson et al. is cited only for the maximum of the absolute values of the real and imaginary parts. As such, nothing in Davidson et al. discloses or suggests any of the elements of amended claims 1 and 13, from which claims 7, 10-12 and 19 depend. Therefore, claims 7, 10-12

and 19 are allowable by virtue of their dependencies on amended base claims 1 and 13. Accordingly, this rejection should be withdrawn.

All objections and rejections having been addressed, it is respectfully submitted that the present application should be in condition for allowance and a Notice to that effect is earnestly solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

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